

and zinc paints which are a big feature of the American paint industry, and are obtained by subliming mixed lead and zinc ores, and which contain various proportions of zinc oxide and lead sulphate, are fully described. The preparation also of the oxides of lead and lead chromes is dealt with, and the preparation and properties of zinc sulphide paints.

A very complete account is also given of the elaborate practical tests of various paints which are being made on special experimental stations in the United States at present, with the view of deciding which paints are most durable for outside use. These experiments are giving some very valuable results. For instance, the usual assumption in this country that white lead is the best pigment for protection of outside surfaces has apparently been quite disproved by these results. Zinc white, or mixtures of zinc white with white lead, prove to be more durable. These experiments are still being continued and the results published from time to time, and should be carefully watched by architects and engineers in this country, where similar experiments might well be carried out. The physical and chemical properties of these various whites and their analyses are also thoroughly dealt with; in fact, the whole book contains a great deal of very valuable information written from the American point of view, and should therefore be of special interest to all those connected with the paint industry in this country.

A. P. LAURIE.

METEOROLOGICAL TABLES.

Tables for the Reduction of Meteorological Observations. Prepared by Dr. G. C. Simpson, under the direction of Dr. Gilbert T. Walker, F.R.S. Pp. ix+95. (Calcutta: Government Printing Office, 1910.)

THE present revised edition of Blanford's meteorological tables, prepared for the routine work of the Indian meteorological service, contains in all sixteen tables, of which the first and last pairs are for the interconversion of barometric heights and of temperatures in the English and metric systems. The remaining tables are in English units. The relationship 1 metre=39·37079 inches, adopted from the international tables, is an example of fictitious accuracy which might be discarded in view of the values found by Rogers (1893), 39·370155, and Benoit (1902), 39·370113. The same criticism applies to the expressions for the corrections to the barometric height H , for the variation of gravity with latitude (λ), and altitude (h), viz. $0·00259 \cos 2\lambda H$ and $5·97 \times 10^{-8} h H$. The arrangement in table vii., for reducing the barometer to sea-level, or for finding differences of height, is excellent. The *logarithms* are tabulated, and the temperature and humidity terms have been combined by assuming a constant value for the mean air-pressure occurring in the latter; the result is that the complicated process involved in applying the Smithsonian or international tables has vanished, and the desired value may be obtained by a simple calculation as accurately as the observations ordinarily allow. It

is, however, *not* necessary to apply the latitude correction to the barometer readings in finding differences of height.

The major part of the volume is devoted to humidity tables for reducing psychrometric observations for temperatures between -20° and 130° F., and for pressures 29·7, 27·7, 25·8, 23·4, 19·7 inches. Presumably 25·8, 23·4 were retained because they are approximately the mean pressures at altitudes of 4000 and 7000 feet respectively, but it seems inappropriate to determine the increments of the argument, *pressure*, by unequal increments of *altitude*. The tables are strictly applicable to observations taken in light winds only.

A useful little table gives the mean daily range of pressure determined from ten tropical stations.

The tables are well and carefully printed on good paper, but the volume might with advantage be made of a more convenient size. The adoption of the principle, common in logarithmic tables, of neither printing nor allowing space for unnecessary figures, would permit this without sacrificing clearness.

E. GOLD.

PLANTS AND GARDENS.

Sweet Peas. By H. J. Wright. Pp. xi+116. Price 1s. 6d.

Pansies, Violas, and Violets. By Wm. Cuthbertson, J.P., and R. Hooper Pearson. Pp. xi+116. *Present-day Gardening*, edited by R. Hooper Pearson. (London and Edinburgh: T. C. and E. C. Jack, n.d.) Price 1s. 6d.

Die Hiede. By W. Wagner. Pp. 200. (Leipzig: Quelle and Meyer, n.d.) Price 1.80 marks.

Niedere Pflanzen. By Dr. R. Timm. Pp. 194. (Naturwissenschaftliche Bibliothek für Jugend und Volk.) (Leipzig: Quelle and Meyer, n.d.) Price 1.80 marks.

Das Holz. By H. Kottmeier and F. Uhlmann. Pp. iv+143. (Leipzig: Quelle and Meyer, 1910.) Price 1.25 marks.

Der Pflanzengarten, seine Anlage und seine Verwertung. By Prof. F. Pfuhl. Pp. 152. (Leipzig: Quelle and Meyer, 1910.) Price 2.50 marks.

THE dictum as to the endless making of books may be applied with particular force to works relating to gardening and nature study at the present day. To such an extent has the gardening fashion seized the country that every class of plants must now have its own special treatise. The two books first on the list are the opening volumes of a series entitled "Present-day Gardening," produced under the editorship of the editor of the *Gardener's Chronicle*, and they appear to be excellent alike in their coloured illustrations and in the letterpress. The illustrations are remarkably good examples of colour printing, and it is only in the case of some of the lilac shades that some criticism might be made. The text is both interesting and practically useful, and the plan followed is similar in both volumes, opening with some historical notes, general culture, the value of the plants for decoration, an account of standard varieties, &c. If forthcoming volumes maintain the level of those

before us, the series should find high favour with the gardening public.

In "Niedere Pflanzen" and "Die Heide" we have two small German natural history books; the former deals with ferns, mosses, fungi, and algæ, and is a wonderfully compact and comprehensive little book, copiously illustrated with a frontispiece of *Equisetum* in colour. "Die Heide" opens with an inferior coloured plate of Culluna, with attendant insects, but the letterpress demands full praise and the illustrations throughout the text are well executed. The history of the heath lands, the component plants, &c., are described in detail, and the biology of the flowers is also fully dealt with; a chapter is devoted to the trees of the heath land. The latter portion of the book gives an account of the animal life of the moor, and numerous figures are given of the various insects associated with this formation. Both volumes are practical and useful works, and the latter especially affords a model which might well be copied in England.

"Das Holz" is a short practical forestry manual, which, in small compass, gives a mass of useful information as to forestry matters in general, such as wood structure, measurement of timber, felling, haulage, &c., and of the industries connected with timber. A book on these lines would probably find a ready sale in England, and be of considerable value.

"Der Pflanzengarten" is concerned with the design and usefulness of a garden as a place for study, and is principally occupied in giving a description of the garden at the Kgl. Mariengymnasium, Posen, and with an account of the plants found therein.

OUR BOOK SHELF.

The Black Bear. By William H. Wright. Pp. vi+127. (London: T. Werner Laurie, n.d.) Price 6s. net.

IN this well-illustrated volume the author has done for *Ursus americanus* that which he accomplished so successfully for *U. horribilis* in its fellow (see NATURE, vol. 82, pp. 423-4, 1910). The first fifty pages are devoted to a young black bear reared and tamed by Mr. Wright, while in the remainder the distribution and habits of the species are discussed in a manner indicative of intimate knowledge. Indeed, the author's acquaintance with the black bear appears to be as close as with its larger grey cousin. "Cinnamon" bears, it is shown, may be either of the black or the grey species, and the author is disposed to regard the glacier-bear (*U. emmonsii*) and the white bear of Gribble Island (*U. kermodei*) as specifically inseparable from the former. From among a number of interesting notes, attention may be specially directed to the author's observations with regard to the extremely small size and imperfect development of newborn bears, especially those of the present species. The cubs of the black bear are at first "absurdly small and pitifully helpless, weighing only from 8 to 18 ounces each, according to the number in the litter, and are born about two months before the dam emerges from her winter quarters." An old bear will weigh about 400 lb.; and the pups of a 40 lb. dog will be as large as the cubs of a bear of this weight. To explain this, the author suggests that a hibernating

bear, which, of course, takes no food, could not nurse cubs proportionately so large as those of the dog; and, whether or no this be the right explanation, there can be little doubt that there is some connection between the hibernating habit and the diminutive size of the cubs.

The book is pleasant reading, and full of hunting and forest lore.

R. L.

Chemistry for Photographers. By Chas. F. Townsend. Fifth edition, revised. Pp. 129. (London: George Routledge and Sons, Ltd.; Dawbarn and Ward, Ltd., n.d.). Price 1s. net.

THE more of chemistry and physics the photographer knows the better is he able to understand his work, to overcome difficulties, and to meet new contingencies. It is impossible to set forth the main facts of chemistry in so small a volume as this, even if the matter is restricted to those subjects that have an immediate bearing on photography; but it is possible to do something useful in this direction even within so few pages. The author commences with burettes and pipettes, and goes on, rather unnecessarily, to gallipots and jampots. We do not think that such expressions as "The iron, as it were, says to the silver, 'You've got my NO₃; drop it!'" And the silver has to drop it," assist in representing the subject clearly, and in this case the description would appear to give an incorrect impression. From about the middle of the book the chemistry almost disappears in favour of practical and empirical formulæ, with short instructions for various photographic operations. Some of the author's statements are open to criticism. We read, on p. 62, that "all chemical reactions are reversible." That as, when a photographic plate is exposed to light "there is no outlet for the products of decomposition—the excess of bromide or other halogen set free on reduction in this case—a state of equilibrium is reached at a certain point. If decomposition is carried beyond this point, reversal sets in, which may go the whole way until the original compounds are re-formed." At p. 86 we read that carbon tissue is thin, and at p. 94, in the five and a half lines devoted to Dr. Smith's "Uto" paper, that "it is rendered colour sensitive by means of anethol." Other misleading or unpractical statements might be quoted. A photographer who wishes to know something about combining proportions, the general properties of acids and alkalies, and a few other elementary chemical matters, will probably find what he wants here, with a good many items of miscellaneous information added.

Die Aufzucht und Kultur der Parasitischen Samenpflanzen. By Prof. E. Heinricher. Pp. v+53. (Jena: Gustav Fischer, 1910.) Price 2 marks.

FOLLOWING upon his original investigations on *Lathræa* and other parasitic genera of the Scrophulariaceæ, Prof. E. Heinricher has prepared this small volume dealing with the propagation and cultivation of parasitic seed-plants that will appeal especially to gardeners charged with the supply of material for botanical laboratories. The notes refer to well-known European parasites and hemiparasites, and some less common genera, such as *Tozzia*, *Osyris*, and *Phelipæa*. One of the most interesting is *Osyris alba*, which flourishes and produces fine suckers on willows. *Phelipæa biebersteinii*, one of the Orobanchaceæ indigenous to the Crimea and the Caucasus, is worth growing for its flower: its natural host is *Centaurea dealbata*. Another novelty recommended by the author is a pot of *Melampyrum arvense*, which feeds on the roots of several shrubs and small trees.